# National Test Laboratory Operation and Use

**Bureau of Land Management**
**National Information Resources Management Center**
**Division of Systems Engineering**

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## 1. Introduction

This document provides insight into the National Test Laboratory (NTL) operated by the National Information Resources Management Center's (NIRMC) Division of Systems Engineering. This document also gives a brief description of the laboratory and the methods of gaining NTL support. Detailed information is published on the NTL website. In addition, information about the various environments, support available, and necessary coordination for use of these facilities has been incorporated into an NTL Users' Guide and NTL Handbook.

## 2. NTL Operating Philosophy

Information Technology (IT) testing at the Bureau of Land Management attempts to ensure that new systems or change to existing system exhibit the properties expected by the project manager, sponsor, system owner, and users. To help in that endeavor, NIRMC has created an NTL. The NTL is an *isolated* testing environment, which means that no outside systems are connected to systems within the laboratory. Tests may be conducted without fear of damaging other systems, destroying or corrupting Bureau data, or being interfered with by other systems.

Test engineers are available to help anyone wanting to use the NTL. This includes providing help in writing test plans, test descriptions, test procedures, conducting tests, analyzing results, and reporting the results.

## 3. Test Environments and Support within the National Test Laboratory Facility

The NTL core infrastructure allows test lab personnel to configure testing environments to the specifications within the lab request and supporting documentation. Test lab personnel configure networks, computer hardware, and system software in preparation for testing activities.

### 3.1 National Configuration Test Environment (NCTE)

The NCTE provides for one of the following:

- Controlled testing of those systems that are a part of the National Configuration Management baseline,
- Controlled testing performed during upgrade of an existing Bureau or Commercial-Off-The-Shelf (COTS) system, or
- Predeployment testing of new Bureau systems or COTS.

The following tests are performed in the NCTE:

- Functional – Functional testing validates the developed application has been built correctly and provides all functionality as identified in the requirements documentation.

- Regression – Regression testing verifies that unmodified functions still operate after a change, e.g., an upgrade, a bug fix, or a patch, has been introduced.

- Interoperability – Interoperability testing determines whether the developed system can work in the actual operating and business environment. It is also known as operability testing.

- Performance – Performance testing determines if response time, throughput, and system availability are acceptable under both normal and peak workloads, inclusive of client, server, and network.

- Remedy Trouble Ticket Resolution – The test laboratory provides an isolated environment to duplicate problems for Remedy trouble ticket resolution.

### 3.2 Systems Engineering Test Environment (SETE)

The SETE provides necessary support for engineering studies, testing of new technologies, and new products outside the National Configuration Management (NCM) baseline. The following tests are performed in the SETE:

- Integration – Integration testing determines whether all components of a system function together as proposed.

- Exploratory – Exploratory testing is used to determine the functionality and usability of a system as it pertains to the BLM IT environment. Exploratory testing also may be required to develop new configurations, test non-baselined technologies, and perform product evaluations where the functionality of the technology is not always known.

## 4. Requesting Use of the NTL

To use the NTL, a test lab request form is required. The form may be found on the BLM internal website at http://web.blm.gov/nirmc/test_lab/test_lab_forms.htm.

### 4.1 National Configuration Test Environment Submission

The NCTE testing is part of the NCM process. A test laboratory request form and all NCM required testing documentation are to be submitted to the NCM for approval. The NCM will submit all necessary documentation to the BLM NTL for review and scheduling. The NCM, in

conjunction with the BLM NTL, will determine the scheduling priorities for all NCTE requests.

### 4.2 Systems Engineering Test Environment Submission

The SETE testing is part of NIRMC Systems Engineering process. The SETE test requests are submitted directly to the BLM NTL for review and scheduling. At a minimum, documentation will consist of a test laboratory request, a test plan, and an outline of the test description and the test procedures. The documentation must include expected start date, duration of tests, equipment and software needed, point of contact information, and any support needed from NTL personnel.

## 5. Technical Review and Scheduling of Tests in the NCTE and SETE

The NTL staff will review both the NCTE and SETE requests. Tests will be scheduled in either environment after the test documentation has been reviewed to determine if there is adequate information to set up and configure the requested test bed. When all required information is submitted and adequate, the BLM NTL will notify the test requestor of review completion and schedule a meeting with the test requestor and the NTL staff for resource scheduling. The BLM NTL will also submit any test documentation recommendations for the test.

## 6. Resource Planning Meeting

A resource planning meeting is held to work out the details of roles, responsibilities, resources, and schedule dates for the NCTE or SETE. The NTL staff will conduct a pre-test validation meeting just prior to the test date to ensure that test needs are unchanged.

## Appendix A - Abbreviations

**C**

| | |
|---|---|
| COTS | Commercial-Off-The-Shelf |

**N**

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|---|---|
| NCM | National Configuration Management |
| NCTE | National Configuration Test Environment |
| NIRMC | National Information Resources Management Center |
| NTL | National Test Laboratory |

**S**

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|---|---|
| SE | Systems Engineering |
| SETE | Systems Engineering Test Environment |